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Malekani, Andrew and Mubofu, Christian, "Agricultural information sources, channels and strategies for sharing agricultural research findings among farmers in Iringa district in Tanzania" (2020). *Library Philosophy and Practice (e-journal)*. 4104.
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Agricultural information sources, channels and strategies for sharing agricultural research findings among farmers in Iringa district in Tanzania

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ABSTRACT

The aim of this research was to investigate the agricultural information sources and strategies for disseminating agricultural research findings to farmers in Iringa District, Tanzania. A total of 90 farmers were interviewed by using self-administered questionnaire. The statistical Package for Service Solutions (SPSS) software *and Spreadsheet were used as instruments to analyse the findings. Results of this study indicate that* radios, church leaders, village leaders and seminars are the main channels of information used by extension officers to disseminate agricultural information to farmers. With regard to strategies the study revealed that, the use of religious leaders and government officials; use of primary school teachers and pupils; non-political interference; repackaging and packaging of technical information reports; deployment of extension officers in rural areas; use of community-based organisations and the establishment of agricultural information boards were the main effective strategies for disseminating agricultural research information to farmers. *It is therefore, concluded that* radio, church leaders, seminars, Newspapers, brochures and fliers should be intensively used to disseminate agricultural information among farmers so as to raise productivity in their farms. The study suggest that, there is a need to use other disseminators such as influential people, religious leaders, political leaders, primary school teachers and pupils to disseminate such information in addition to repackaging of agricultural research findings to tailor it to the farmers' needs.

Keywords: Agricultural research findings, Agricultural information dissemination, Agricultural Information, Agricultural information channels, Information Dissemination Strategies.

Introduction

The dissemination of agricultural research information findings is critical in facilitating the application of reliable agricultural information by farmers. No matter how promising the agricultural information is, it needs to reach farmers for it to be meaningful (Lucky & Achebe, 2013). In this regard, farmers need to know how to increase their products and how to use new techniques by applying the new agricultural research findings (Das, 2012). According to Statrasts (2004), information source is an institution or an individual that creates or brings about a message. A good information dissemination source must be relevant, timely, accurate, cost effective, reliable, usable and exhaustive and of an aggregate level. Information source is a base from which information originates, the one who transfers information to the receivers after carefully putting one's thoughts into words. Lucky and Achebe (2013) further noted that information sources used to disseminate agricultural research findings to farmers for on farm activities include researchers, extension officers, knowledgeable farmers, research institutions; mass media, commercial and government agencies.

Furthermore, studies by Rogers (2003) and Das (2012) show that important channels for disseminating agricultural research findings emanating from the researchers, extension officers, knowledgeable farmers, research institutions; mass media, commercial and government agencies to the farmers includes mass media and interpersonal communication. Mass media and interpersonal communication plays a big role in circulating information and creating awareness among farmers and other stakeholders especially in rural areas. Ndungu *et al.* (2000) on the other hand found that major sources of agricultural information for farmers include: neighbours, family, markets and community-based organisations. In another study by Malekani (2018) to find out sources of indigenous knowledge (IK) used for management of agro-biodiversity, the author found that the primary sources of indigenous agrobiodiversity knowledge were predominantly tacit and local, which included personal experience 205 (89.1%), parents or guardian or family 202 (87.8%), neighbours, friends and relatives 131 (57.0%). Other major sources of IK were also local sources, which included social group gatherings 55 (23.9.5%), village meetings 31 (13.5%), village leaders 30 (13.0%) and farmers groups 19 (8.3%). Farmers made little use of formal sources of knowledge such as books, posters, newspapers, seminars and agricultural shows. A study by Annune, Ezeani and Okafor (2014) found that effective sources of information dissemination among farmers include colleagues and market places. Ndungu *et al.* (2000) further noted that between 40 and 70 percent of the farmers in their study revealed that government extension was an important source of information in their farming activities. Other important sources of information outlined by these authors include non-governmental organisations, churches, community meetings, libraries and agricultural companies, which play a significant role in the dissemination of information.

Furthermore, Tantisantisom (2011) argues that farmers may get agricultural information through a variety of sources and information providers. Tanzania Metrological Agency is pointed to be the key source of information on weather conditions and forecasts information. Other important components of information may be obtained from other providers such as agricultural experts,

trainers, extension officers and agricultural research institutes. In Tanzania, a study by Kaaya (1999) established that the dissemination of agricultural research information through various avenues such as reports, handbooks, conferences, meetings, field/farmers' days, demonstrations/on-farm trials and scientific journals ensures that technologies developed during research reach end users to improve the agricultural production through application.

Dissemination strategies aims to spread knowledge and the associated evidence-based interventions on a wide-scale within or across geographical locations, practice settings, social or other networks of end-users such as farmers. Other strategies used in India, according to Bulaji and Craufurd (2011), include linking public libraries with extension workers for effective information dissemination and the establishment of agricultural advisory boards comprising librarians and extension workers to make extensive use of non-print media as means for overcoming ineffective dissemination of information to farmers. Dlamini and Ndwandwe's (2014) study on perceived factors influencing the dissemination of agricultural information to farmers by agriculture teachers and extension officers in Swaziland found that adequate collaboration between agricultural teachers and extension officers were the best method for farmers and students to foster the dissemination of agricultural research information to stakeholders. Lwoga (2010), who focused on bridging the agricultural knowledge and information divide, noted that in Tanzania timely access to relevant knowledge and information was a strategy which has a potential for helping smallholder farmers make informed decisions regarding their agricultural production activities, marketing of their agricultural produce for better profits, and health benefits, disease prevention and advice. Similarly, Siyao's (2012) study on barriers to accessing agricultural information in Tanzania from a gender perspective found that, the strategies that were recommended by agricultural stakeholders to enhance the dissemination of agricultural information include the establishment of rural libraries in farming communities and repackaging of information in a form that every farmer could understand.

In addition, the use of audio-visual resources such as CDs and DVDs could also enhance the dissemination and utilisation of information by small-scale farmers as farmers could hear the sound and visualise the images. This study aimed at investigating the agricultural information sources and the strategies for disseminating agricultural research findings to farmers. Thus, it was guided by the following research question: what is the agricultural information sources used to disseminate agricultural research findings to farmers in Iringa District? And what are the effective strategies for disseminating agricultural research findings to farmers in Iringa District?

Theoretical and conceptual frameworks

Sen (2005) developed a model to explain the process of information communication. Under this model, the information communication process begins when the sender is stuck by an idea. This idea/information is then expected to be disseminated to the key stakeholders in this case the farmers. To disseminate this information and reach the intended audience dissemination

strategies must be properly chosen, which – according to Sen (2005) represents a channel through which the information travels. Dissemination strategies are important in enabling farmers obtain “know how” to realize the production and productivity and in accessing agricultural research findings. The choice of dissemination strategy depends on the purpose of communication, the sender’s needs and the profile of the receiver. The information receiver is any individual to whom the information has been transmitted and in this case the farmers. The success of information dissemination via any source depends on the dissemination strategies which act as a vehicle that carries agricultural research findings to the farmers. Figure 1 presents a model for disseminating agro-research findings to farmers.

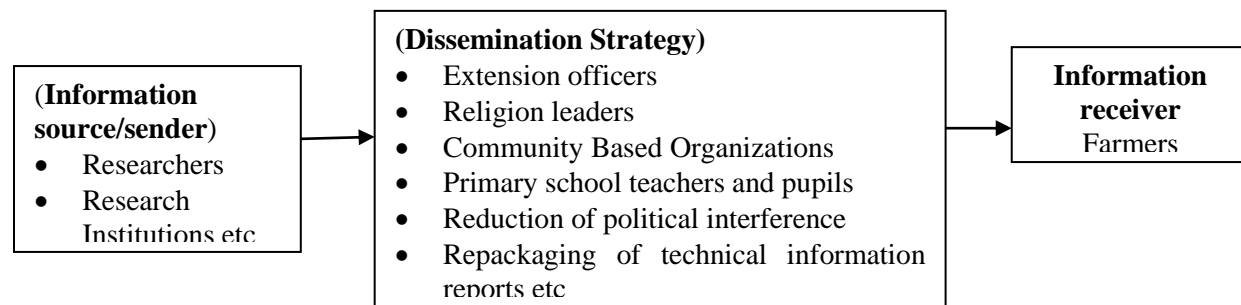


Figure 1: A conceptual Model Underpinning this study

Methodology

This study was conducted in Iringa district, whereby maize is the main crop produced in the study area. The study focused on information disseminated to maize farmers since it’s the main staple crop in the study area. The study deployed a mixed methods approach which facilitated the deployment of both qualitative and quantitative methods in data collection and analysis. Purposive sampling was employed to select the 90 respondents (farmers) to be involved in this study. Data were collected through the questionnaire which was administered to 90 farmers. Statistical Package and Service Solution (SPSS) version 18 was used to analyse quantitative data whereas qualitative data was subjected to content analysis.

Findings and discussion

Agricultural Information Sources for Disseminating Agricultural Research Information

Farmers were asked to indicate the sources of information from which agricultural research information are disseminated to them. The results presented in Table 1 show that radio, church leaders, village leaders, seminars, exhibitions, newspapers, brochures and fliers were the main sources and channels of information used by extension officers to provide agricultural research information to farmers as summarised in Table 1.

Table 1: Information Sources/channels for Disseminating Agricultural Research Information (n=90)

Information Sources/channels	Responses			
	Yes		No	
	F	%	F	%
Brochures and fliers	14	15.6	76	84.4
News papers	21	23.3	69	76.7
Exhibitions	27	30	63	70
Seminars	32	35.6	58	64.4
Village leaders	57	63.3	33	36.7
Church leaders	63	70	27	30
Radio	74	82.2	16	17.8

Key: F = Frequency

% = Percent

Radio: The study findings presented in Table 1 show that the majority (82.2%) of the farmers indicated that radio is the most widely used information source in disseminating agricultural research information in the study area. This is possibly because radio is the main tool in information dissemination because it reaches larger proportion of the people irrespective of their position; it promotes the level of awareness of the people and it also enables people to be adequately informed. Kaaya (1999) echoed that agricultural education intervention programmes will be more fruitful if they are conveyed through the radio. The increased use of radio as a source of information in the study area is probably due to the presence of *Furaha FM* radio which is owned by the University of Iringa's Institute of Agriculture. These findings are in agreement with those of Ozawa (1995) and Belay (2008) who found that radio was a major source of information farmers used in accessing agricultural information. Indeed, radio can reach many people much more quickly than other media and does not require reading ability on the part of semi-illiterate or illiterate farmers to obtain necessary information.

Church leader: The study findings in Table 1 revealed that 70% of the farmers mentioned church leaders to be the most widely used sources and channels in disseminating agricultural research information. The research findings corroborate with studies like that by Ndungu *et al.*, (2000), which found that in Kenya participation of religious leaders and faith organisations in agricultural related issues improves the level of reception, sharing and positive agricultural outcomes within the farmers in faith communities. It is found that church leaders boost the reach of information, increases people's inspiration to use and apply research based information due to active participation church leaders in the dissemination of agricultural research information.

Village leaders: It was also revealed that, leaders are an important component of an effective information dissemination strategy. Findings in Table 1 revealed that 63.3% of the respondents agreed that village leaders are the source of information to farmers in the study area. Village leaders normally originate from the local people thus, they can speak the same indigenous language and be understood by the people when delivering a message to people in that area.

Influential people such as church leaders, ward executive officers and political leaders are good sources of information and they must possess excellent communication skills to make their communication effective to intended stakeholders.

Seminar: In addition 35.6% of the farmers said seminars were the source of information dissemination to farmers. Seminars relate to any gathering set up for the dialogue of one or more subjects of attention to groups of persons. A seminar serves as a meeting for sharing research findings and offers a stage for outreach to policy makers and the general society. Seminars when used successfully they can play a very important role in the dissemination of data, information and knowledge.

Exhibitions: Furthermore, 30% of the farmers reported that exhibitions are the most extensively used information source to disseminate agricultural research information. Exhibition is an organised presentation and display of a selection of items and in practice occurs within a certain setting like educational or cultural setting.

Newspapers: The results in Table 1 also show that newspapers are also the sources used in dissemination of agricultural research information. Results show that 23.3% of the farmers stated that newspapers were used in disseminating agricultural information in the study area. Newspapers are the store of present information and wealth of knowledge related to personal as well as social and local issues. Also scholars accept that use of newspapers in teaching-learning process develops basic skills, attitude and finally increases people's ability of understanding (Wangusa & Kajimbwa, 2010).

Brochures and fliers: Findings of the study revealed that 15.6% of the farmers said brochures and fliers were sources of information dissemination. Brochures and flyers can be an extraordinarily successful way of getting your message out to the public. Wangusa and Kajimbwa (2010) noted that, whether you want to generate support for a project, raise awareness about an event, or inform the public about a community issue, brochures and flyers will help you speak with community members.

From the findings above, this study found quite different (opposite) results from other studies done elsewhere in African countries which found that farmers rarely used formal sources of agricultural information and knowledge (public, private extension services, researchers and printed materials) such as that in Nigeria (Nathaniel-Imeh 2004; Olatokun and Ayanbode 2008), Tanzania (Nathaniels and Mwijage 2000; Lwoga *et al.* 2010), and Uganda (Akullo *et al.* 2007), who found that informal sources were the dominant sources of agricultural knowledge as compared to formal sources of knowledge.

Strategies for Strengthening Dissemination of Agro-Information to Farmers

Farmers were asked to state the strategies for strengthening the dissemination agricultural research information in the study area. Findings are summarised in Table 2.

Table 2: Strategies for strengthening dissemination of Agro-Information (n=90)

Strategies for Strengthening Dissemination	Responses			
	Agree		Disagree	
	F	%	F	%
Use of religious leaders and government officials	84	93.3	6	6.7
Use of primary school teachers and pupils	72	80	18	20
Reducing political interference	69	76.7	21	23.3
Repackaging of technical information reports	53	58.9	37	41.1
Extension officers deployment	52	57.8	38	42.2
Use of community-based organisations	41	45.6	49	54.4
Establishment of Agricultural Information Boards	32	35.6	58	64.4

NB: F = Frequency % = Percent

Use of Religious Leaders and Government Official: The majority of the farmers (93.3%) agreed that the use of both religious leaders and government officials could be employed as a strategy for effective dissemination of agricultural research information. These study findings concur with those of Meera, Jhamtani and Rao (2004) who established that new improvement in agricultural information dissemination, including the use of religious leaders, has emerged as a new concept of agricultural development. The approach of using religious and government official in dissemination of important research information improves on the old ways of delivering vital services to citizens like farmers and livestock keepers in rural areas. Moreover, traditional societies are also being transformed into knowledge societies by utilising the agricultural research information disseminated to them by religious leaders and government officials for enhancing agricultural productivity. Lwoga (2009) identified religious leaders as information sources rural people relied upon to get information and improve their output. This implies that since farmers accept positively information delivered to them through religious and government officials as indicated by 93.3% of the farmers in this study, then the government should take initiatives of training these leaders so that they could deliver correct information to

farmers to apply in their agricultural production. The use of religious leaders and government officials is critical for wider dissemination of agricultural research information to farmers in rural areas where other means of information dissemination are not accessible or expensive to afford.

Use of Primary School Teachers and Pupils: The study findings presented in Table 2 shows that the use of primary school teachers and pupils is useful in enhancing agricultural research information dissemination to farmers. Through this method extension officers can pay visits to various schools and provide agricultural research information to teachers and pupils so they can send it to their parents. This technique could be effective and could have a greater impact on the dissemination of agricultural research information to farmers in rural areas as pupils can educate their parents who are farmers in the study area. In this regard, Chisita (2010) asserts for the extension services to utilise schools as well as community gatherings to disseminate information through word of the mouth, posters and publications ought to be produced in various ethnic languages for small farmers as was the case in Zimbabwe. Eighty percent of the farmers in the study area indicated the use of primary school teachers and pupils in the dissemination of agricultural research information as a proper strategy to be adopted by the government in ensuring that agricultural research information reaches the intended farmers on time.

Reducing Political Interferenc: The study found that political leaders were politically interfering in the professional work of extension officers. In this regard, non-political interference could help professionals work independently and execute their duties more effectively. The study findings indicated that a considerable amount of farmers (76.6%) agreed that for effective dissemination of agricultural research information to farmers in the country to take place, political interference should not be condoned. It is common to find politicians assigning agricultural extension officers tasks not related to their professions. Bello *et al.* (2014) established that the performance of extension services was being affected by politics, which in turn affects the dissemination of agricultural information to farmers. For instance, agricultural extension agents cannot conduct a village meeting without first obtaining permission from a village leader, who is a politician. Therefore, farmers in the area of the study suggested exclusion of political interference in professional work to ease the challenges of disseminating agricultural research information to farmers as a good strategy to enhance the information dissemination process.

Repackaging of Technical Information Report: The study findings further show that repackaging of technical information reports was one of the proposed measures towards strengthening agricultural research information dissemination among farmers in the study area. In this regard, the study findings show that technical information reports needed to be repackaged to suit farmers' needs. These findings concur with those of Elia (2014) who also noted that packaging and repackaging was crucial in enhancing the farmers' understanding of agricultural information. Similarly, Siyao (2012) affirms that technical language used in

disseminating agricultural research information is inconceivable to farmers. In the current study, farmers also suggested that technical agricultural research findings disseminated through various reports should be repackaged in the form that could make every farmer understand the message contained in a given report. This implies that, packaging and repackaging of information to farmers improve the utilisation of agricultural research findings. Furthermore, packaging and repackaging improves information clarity and interpretation of modern farming practices (Olaleye *et al.* 2009). Therefore it can be noted that, tricky, complicated and unknown language used to disseminate information to farmers makes it difficult for farmers to understand the message being delivered. Thus, it is a good strategy to ensure that the technical languages are boiled down to ensure effective dissemination of agricultural research information to farmers.

Extension Officers Deploymen: The study findings in Table 2 established that the employment of more extension officers was a strategy which could enhance the agro-research information dissemination process in the study area. Employment of more extension officers envisaged to ensure that farmers get the right information from these officers. The findings of this study concur with those of Anaeto *et al.* (2012) who point out that the elimination of agricultural development problems can be achieved through scaled up extension services and this can only be achieved by employing not only adequate numbers but competent and committed extension officers to overcome hurdles associated with ineffective dissemination of agricultural research findings to farmers. Additionally, Mtega (2018) noted that disseminating agricultural information to farmers in rural areas in developing countries including and Tanzania in particular is limited by poor farmers' access to agricultural extension officers. In this regard, the Tanzanian government should employ more extension officers to attain effective dissemination of agricultural research findings. Findings of this study indicated that 57.8% of the farmers agree that employment of more extension officers in rural areas could improve farmers' access to information delivered by extension officers to the farmer.

Use of Community-based Organisations: The use of community-based organisations (CBOs) was reported to be a highly useful strategy in influencing the information dissemination process. From the study findings in Table 2, one infers that farmers see CBOs as effective in providing a link between farmers and agricultural experts. These experts provide information to farmers on various agro-related issues. These findings are in tandem with previous research by Ndungu *et al.* (2000) on agricultural knowledge and information systems in Kenya, which established that many CBOs were well-developed to provide potential entry points for knowledge dissemination and generation. In fact, many of the NGOs and religious organisations maintain links with CBOs, and have often been responsible for their formation. One of the dominant community-based organisation in the study area is *One Acre Fund*, which plays a significant role in bringing together farmers and giving them necessary agricultural information, especially on agricultural inputs and links the farmers with the market of their produce. Therefore, the government should support CBOs to facilitate the farmers' productivity in the study area. The study found that

45.6% of the farmers point out that the use of community-based organisations in the study area could strengthen the information dissemination to farmers in the study area. These findings imply that a certain number of farmers rely on the information provided to by CBOs and therefore, these CBOs need to be supported by the government as they are playing an important role of serving the farmers with suitable agricultural information that could otherwise be provided by the government.

Establishment of Agricultural Information Board: It was also established that, integrating librarians and extension officers through the formation of agricultural information boards that could allow them to pool their expertise together in the process of designing agricultural research information dissemination plans is useful. In this regard, the study findings show that the use of agricultural information boards composed of librarians and extension officers was crucial in devising effective information dissemination programmes. As information professionals, librarians could assist extension officers in disseminating the agricultural research information to the right people in the right format and at the right time. Such an approach could enhance the utilisation of disseminated agricultural research information for the improvement of the country's agricultural sector. Findings of this study shows that 35.6% of the farmers support that the establishment of agricultural board comprising librarians and extension officers could help overcome the challenges inherent in the dissemination of agricultural research information and thus, improve the delivery of agro-information to farmers in rural areas.

Conclusions

From the evidence gathered in this study, it can be concluded that radio, church leaders, village meetings and church meetings were the major sources and channels of disseminating agricultural research findings in the area of study. Indeed, the radio was found to be mostly preferred and used sources and channel of information by farmers because of their convenience in reaching large audiences. With regard to strategies the study concludes that, the use of religious leaders and government officials; use of primary school teachers and pupils; non-political interference; repackaging and packaging of technical information reports; deployment of extension officers in rural areas; use of community-based organisations and the establishment of agricultural information boards should be adopted for effective dissemination of agricultural research information to farmers in the study area.

Recommendations

Based on the findings, discussions and conclusions, the study recommends that farmers should be more proactive in seeking relevant agricultural information from various information dissemination sources instead of simply waiting for the information from extension officers and religious leaders and other disseminators. The study also recommends the use of influential

people such as religious and village leaders in disseminating of agricultural research information to farmers. The study further recommends that, instead of the government relying only on extension officers to disseminate agricultural research information to farmers; it should also attempt to use other disseminators such as influential people, religious leaders, political leaders, primary school teachers, pupils and Community Based Organizations. These agents have been observed to be effective in disseminating agricultural research information to farmers. Elia (2014) found influential people to be crucial in disseminating agricultural climate change information to farmers in Tanzania.

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